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Notes on Rosaceae—IX

P. A. Rydberg

DALIBARDA

Dr. Focke includes this genus in *Rubus*, making it a subgenus under the same. In this subgenus, he includes *R. lasiococcus*, *R. Fockeanus*, *R. pedatus* and *R. Gunnianus*. None of these species are related to *Dalibarda repens* L. The latter differs from all species which have been included in *Rubus*, by the practically dry fruit, the essentially monoecious flowers, of which the pistillate ones are apetalous. Dr. Focke describes the flowers as being "both perfect sterile and cleistogamous fruiting." The essentially staminate petaliferous flowers have only rudimentary pistils. The basal apetalous flowers, I think, hardly could be called cleistogamous, as I have found no polleniferous anthers, and think that they are pollinated from the staminate petaliferous flowers. This is something which needs further investigation.

RUBACER

Dr. Greene* restored the generic name *Bossekia* Necker for this genus. It is true that *Rubus odoratus* L. was probably a part of Necker's genus, but *Bossekia* was not properly published under the American Code. The paragraph concerning the publication of generic names reads as follows:

"Canon 10. A generic or subgeneric name is published when it has been printed and distributed: (1) with a generic or specific description (or in paleobotany, a figure) and a binomial specific name; (2) with a generic and specific name and the citation of a previously published description; (3) with a reference to a specific description, which is associable by citation with a previously published binomial species."

As Necker's Elementa does not contain any specific names, *Bossekia* could not have been published under proviso No. 1 or No. 2. It remains to see if it was published under No. 3. Necker refers to it some simple-leaved species of *Rubus* of Linnaeus, but he does not refer to any special work of Linnaeus. Dr. Greene claims that it was to Species Plantarum, but this is very unlikely. Wherever Necker refers to any work of "Linnaeus," the reference is to the 14th edition of the Systema, which was published six years before Necker's Elementa. This was not a work of Linnaeus, but of Murray. There is in Necker's Elementa under *Bossekia* no "reference to a specific description, which is *associable by citation* with a previously published binomial species." Hence *Bossekia* is not properly published according to the American Code.

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* Leaflets 1: 210 and 230. 1906.

Dr. Greene in defending *Bossekia* and attacking *Rubacer* published four pages of sarcastic criticism. Immediately I wrote an article quite as sarcastic in answer, but decided that it was not worth while to publish it, as Dr. Greene's article was an example of either insincerity or hasty carelessness. As example may only be given, Dr. Greene in two places claimed that *Rubacer* meant red maple. A linguist like Dr. Greene knows that the final *r* in *ruber*, red, is a part of the stem of the word and if red maple was meant the word should have been *Rubracer* and not *Rubacer*. Neither did I intend with the name *Rubacer* maple-leaved raspberry, but raspberry maple, which is just as good.

Dr. Greene devotes almost a page to *Rubus moluccanus*, with eight mostly silly questions.* There is no need to answer them in full. Anyone who has access to Rumphius can see from the figure that his *Rubus moluccanus* and his *Rubus moluccanus parvifolius* are not drawn from stages of the same species. Neither were the names given by Rumphius intended to be specific and varietal names as we now apply them. *Rubus parvifolius* L., based on the latter, is not a blackberry but a raspberry related to *R. rosaeflorus*. See Focke.† *Rubus moluccanus*, on the contrary, is a species of the maple-leaved blackberries of Asia of the subgenus *Malacobatus*. Rumphius's figure of *R. moluccanus* shows the plant in fruit. It does not, therefore, represent a seedling state of *R. parvifolius*. Did Dr. Greene investigate these facts before he asked his questions?

Rubus parviflorus Nutt., the earliest name for *Rubacer parvi-*

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* See Leaflets 1: 233. 1906.

† Bibl. Bot. 17^{72}: 150. 1911.

florus (Nutt.) Rydb., was a misnomer, for the species has one of the largest flowers found in the whole tribe. Nuttall's specimens from Lake Huron must have had unusually small flowers, and probably Nuttall compared it with *R. odoratus* L., its nearest relative, but the specific name *parviflorus* was under all circumstances an unhappy selection. *Rubus nutkanus* Moc. is the name which has usually been applied to this species. It may, however, belong to *Rubacer tomentosus*, which is perhaps more common on the Nootka Sound. There is little to say about the other synonyms given under this species, except *Rubus Roezli* Regel, which does not belong here but to *Oreobatus deliciosus*, as the figure in Gartenflora shows.

Heller took up the name *Rubacer velutinus* for *R. tomentosus* Rydb., which he based on *R. velutinus* Hook., an untenable name, being preoccupied by *R. velutinus* Vest.

OREOBATUS

This name was not based on the subgeneric name *Orobatus* Focke (meaning the same, but not properly formed) as I had overlooked the same, but this fact does not invalidate it as a generic name.

Dr. Otto Kuntze reduces the whole genus to varieties of *Rubus odoratus* L. It shows how superficial he was, paying in this case attention only to leaf-forms and not to the structure of the flower and fruit. Professor A. Nelson fell into the same error, but in less degree, when he made *Oreobatus deliciosus* a species of *Bossekia*. There are only two alternatives in this case. Either *Oreobatus* and *Rubacer* (*Bossekia*) must be regarded as distinct genera or else both retained in *Rubus*.

Oreobatus neomexicanus (A. Gray) Rydb. (*Rubus neomexicanus* A. Gray) has often been regarded as a variety or even as a synonym of *O. deliciosus*. I think, however, that it is well distinct.

Oreobatus rubicundus was lately described by Wooton and Standley. It is closely related to *O. neomexicanus*, but has smaller leaves, flowers and fruit, and nearly glabrous leaves. The pubescence on the petioles is appressed. I have seen no specimens of this except those cited in the original publication.

Oreobatus trilobus (Seringe) Rydb. is a fourth species of the genus. The variety *Rubus trilobus guatemalensis* Focke is of little value. The characters given are not distinctive. The shorter terminal lobe of the leaves is only occasional and found only rarely even in specimens from Guatemala, and the color of the petals, as far as I have been able to find, is always purple.

CHIAPAS: *Ghiesbreght, 97, 509.*

OAXACA: Sierra Filipe, *Pringle 4670; Liebmann; E. W. Nelson 1172;* 18 miles southwest of the city of Oaxaca, *Nelson 1413.*

VERA CRUZ: Orizaba, *Seaton 252.*

PUEBLA: Boca del Monte, *Purpus 2453.*

GUATEMALA: Volcan d'Agua, *Maxon & Hay 3676, 3744; Pittier 32; Shannon 3631.*

RUBUS

LIMITATION OF THE GENUS AND SYNONYMS

The only two botanists who have tried to divide *Rubus* into several genera are Rafinesque and Greene. Some of the proposed genera are habitually fairly distinct, but there are no essential differentiations in the flower and fruit, on which generic lines could be based. Some of the Asiatic and South American species may represent distinct genera, but, as far as the North American (and also European) species are concerned, there is none that in my mind is different enough from the general type to make its separation as a genus warranted, except those removed to *Dalibarda*, *Rubacer*, and *Oreobatus*.

Cylactis was the first genus proposed by Rafinesque. Its type was *Cylactis lyncimontana* or *C. montana* Raf., which is the same as *Rubus pubescens* Raf., *R. triflorus* Richards, and *R. americanus* (Pers.) Britton. This is a raspberry as far as the flowers (except the filament) are concerned. The fruit approaches the raspberries in color and flavor, but does not separate as a cap or thimble. It is a dewberry as to the habit, but the receptacle is not fleshy. It differs from both dewberries and raspberries in the wholly unarmed plant, the broad and almost free stipules, and the dilated filaments, three-toothed at the apex, the longer middle tooth bearing the anther. The lack of armature (prickles or bristles) is no generic character, for both the closely related

R. saxatilis and *R. transmontanus* are more or less bristly. Neither is the width of the stipules. The structure of the filaments separates the species of the *R. arcticus* and *R. saxatilis* groups from all other American species of *Rubus*, but in *R. saxatilis* and *R. transmontanus* this character is less marked. The latter connects the group with the raspberries, the former with the dewberries of Europe.

Dyctisperma, *Cumbata*, and *Ametron* of Rafinesque were based on Asiatic species usually regarded as blackberries and naturally will not be discussed here.

Ampomele Raf. was based on an Asiatic raspberry.

Selnoritíon Raf. was based on American and European dewberries including also *R. saxatilis*. It has no generic value.

Manteia Raf. was based on *Rubus stellatus*, a species which is, notwithstanding its merely lobed leaves, so closely related to *R. acaulis* with three-foliolate leaves that many botanists regard them as belonging to the same species. The structure of the fruit and the flowers is identical. The latter apparently grades into *R. arcticus*, which on the other hand connects with *R. pubescens*. These species are also connected by hybrids. *Manteia* could not be regarded as a distinct genus from *Cylactis*.

Batidaea (Dumort.) Greene was based on the red raspberries with *R. idaeus* as the type. If we had no other species of *Rubus* than the raspberries and the blackberries, I would be willing to accept this genus. As stated above, *R. pubescens* combines characters of the raspberries and dewberries (= decumbent blackberries), but there are Mexican species of *Rubus*, as for instance *R. scandens* and *R. fagifolius*, which are blackberries in every respect except the fruit. The receptacle is practically dry and the drupelets fall off separately. So they do also in a West Indian blackberry, *R. jamaicensis*. In some Asiatic species, usually regarded as raspberries, the fruit does not "come off as a thimble." *Rubus ellipticus* is so like a Mexican group of blackberries in both habit and flowers that anyone not knowing its raspberry fruit would place it in that group and next to *R. adenotrichos*.

It is, therefore, impossible to draw a line between blackberries and raspberries, which also hybridize not seldom in Europe.

As far as I can interpret the American Code, the type of

Rubus with Linnaeus should be *R. idaeus*, and if I had separated the raspberries and blackberries generically, I would have adopted *Rubus* as the generic name of the former. Dr. Greene does not accept the Linnaeus Species Plantarum as the starting point of botanical nomenclature, and on that ground probably had valid reasons for a different interpretation. The validity of the proposed species of *Batidaea* I shall discuss later.

Melanobatus Greene has no foundation as a genus separate from *Batidaea*. The only characters given by Greene distinguishing the two genera are the pulp of the fruit and the reticulation of the pyrenes. The former is said to be soft, very juicy and perishable in *Batidaea* and scanty, firm rather than watery, in *Melanobatus*. *Rubus idaeus aculeatissimus* of Siberia according to Focke has almost dry fruit. Regarding the keel on the back of the putamen, it is not very prominent in *R. leucodermis* and not found at all in *R. Pringlei* Rydb. (*R. occidentalis grandiflorus* Focke). The leaves are said to be "pinnately (rarely pedately) 3–5-foliate." As far as I know, whenever the leaflets are more than three in the black raspberries, the leaves are pedately compound with the terminal leaflet long-petioluled. Someone may ask the question if this also applies to *Melanobatus neglectus* (Peck) Greene and *Melanobatus michiganus* Greene. No, not always, but these I understand as forms of *R. occidentalis* × *strigosus*,* and the occasional pinnately five-foliolate leaves are an inheritance from the other parent, *R. strigosus*.

Paramena Greene has *R. spectabilis* Pursh for the type. This can not be separated generically from the other raspberries. It is closely related to *R. rosaefolius*, although this relationship has not been pointed out so far as I know. There are all kinds of gradations between the *R. rosaefolius* group and the *R. idaeus* group.

Cardiobatus Greene was based on *Rubus nivalis* Dougl. No character of generic value has been pointed out by Dr. Greene. He himself stated: "Technically, a true blackberry" [I do not know if it has a fleshy receptacle, but I doubt it]. The best character to separate it from the dewberries is the broad, almost free stipules. Greene describes the petals as rose-red, showy. As far as I have been able to find they are white.

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* The hybridity of *R. neglectus* is satisfactorily proven, as the hybrid has been produced artificially and does not differ from the wild plant.

Psychrobatia Greene was based on *Rubus pedatus* Smith. This is the best of the genera proposed by Dr. Greene. The pedately compound leaves are a striking character, but known in many blackberries and the black raspberries. The statement made by Dr. Greene, that only two carpels mature, is erroneous, for there are usually more than two, although always few. They are large and as far as I understand substipitate, i. e., tapering at the base, a character not found in any other species; but I have not thought it important enough to give the plant generic rank.

Comarobatia Greene was based on *Rubus lasiococcus* A. Gray. The habit is that of *R. pedatus* and other unarmed species, the leaves like those of *R. stellatus* for which it had been mistaken. The fruit is that of a dewberry, although the drupelets are few and pubescent; but pubescent fruit we find in the raspberries, in *Rubus ursinus* and some of its relatives, and in many Mexican species of blackberries.

Greene also restores the pre-Linnaean genus *Chamaemorus* Clusius. At first glance this seems a fairly good genus, but the habit is that of the *R. arcticus* group, especially *R. stellatus*, which also has simple leaves. *Rubus Chamaemorus* is a dioecious plant. All the species of the *R. arcticus* group have a tendency to be polygamo-dioecious. In the structure of the fruit and the stipules, there is little difference. In the broad spreading petals and not dilated filaments it differs, however, but in this respect it agrees with most blackberries.

Greene admits two species, *Chamaemorus anglica* and *C. norwegica*, both credited to Clusius; but Clusius did not have these names in the form given. The first is found only in the margin opposite a fictitious illustration under the name *C. anglicana*, and the latter is spelled in the heading *Chamaemorus norwagica* and in the margin as *C. Norvvagica*. Such a way of citation is careless; but Dr. Greene may claim that he intended an improvement of form and spelling, as *anglica* is a better and more common form than *anglicana* and an *e* in the second syllable of *norwegica* is better than an *a*. But why not make the improvement complete and spell the latter with a *v* instead of a *w*, as the latter character was unknown to Latin?

None of these genera I regard as distinct enough from *Rubus* proper to retain their generic rank.

GROUPS AND SPECIES OF RUBUS

CHAMAEMORI

This contains only one species, *R. Chamaemorus* L. The figure of *Chamaemorus anglicana* in Clusius' Historia is fictitious. No such plant is found in England. See further notes above under *Chamaemorus.*

LASIOCOCCI

As far as I know this group is also monotypic, the species being *R. lasiococcus* A. Gray. It is the same as the genus *Comarobatia* Greene [see above], and a part of Focke's subgenus *Dalibarda.*

PEDATI

This contains only one species, *R. pedatus*, unless *R. Fockeanus* and *R. Gunnianus* of China and Tasmania might be referred here. It is also a part of Focke's subgenus *Dalibarda* and the genus *Psychrobatia* Greene.

ARCTICI

This consists of *R. stellatus*, *R. acaulis*, and *R. arcticus.* It is the same as the series *Arctici* of Focke's subgenus *Cylactis*, and the genus *Manteia* Raf.

Rubus stellatus Smith. Except as to the three-lobed instead of three-foliolate leaves there is little difference between this species and *R. acaulis.* If the latter should be united with *R. arcticus*, I see no reason why *R. stellatus* should not be included there also.

Rubus acaulis Michx. and *R. arcticus* L. Most of the American material labeled *R. arcticus* L. belongs to *R. acaulis.* It is also the same as *R. pistillatus* Smith. Smith stated that he had seen it and *R. arcticus* cultivated together and that they remained distinct. Seringe also regarded them as distinct. *Rubus acaulis* is found neither in Europe nor in Asia except in the extreme eastern part, and *R. arcticus* is not found on the North American arctic coast or in Alaska. It is in the region where both are found, viz., in Labrador, Quebec, and apparently also the Canadian Rockies, where there is some trouble in distinguishing them, on account of intermediate forms. May these not be hybrids?

SAXATILES

Rubus saxatilis L. No authentic specimens of this have been collected on the North American continent, but on this side of the Atlantic Ocean it is found only in southern Greenland. A sterile branch that may belong here was collected by Bicknell at Piedmont, Quebec.

Rubus pubescens Raf. seems to be the oldest specific name for the species usually known as *R. triflorus* Richardson or *R. americanus* (Pers.) Britton. Rafinesque based his species on *Rubus saxatilis canadensis* Michx. Evidently he did not know the plant, for eight years later he proposed a new genus based on what he supposed to be a new discovery of his. In the same year, 1819, the species was published both as *Cylactis lyncemontana* and *C. montana*. Seringe also thought there were two distinct species. His *R. mucronatus* is the same as *R. pubescens* Raf. and *R. aegopodioides* was based on *Cylactis montana* Raf. Torrey adopted Michaux's varietal name as specific and Britton did the same with that of Persoon, but both *Rubus canadensis* and *R. americanus* had been used previously.

Rubus transmontanus Focke. Focke proposed this name, as he thought, instead of the untenable *R. hesperius* Piper, but his description does not fit the latter at all. *R. hesperius* is a black raspberry, closely related to *R. occidentalis*, but the leaves are without tomentum beneath. The stem is armed with curved prickles as in that species. The plant described by Focke is, from the description, closely related to *R. pubescens*, but the stem is more or less prickly or bristly. The specimen cited below is the only one seen which fits the description. This may be a hybrid between *R. pubescens* and some species of the *R. strigosus* relatives. Focke gives as distribution, eastern Washington and the banks of the Columbia River at Revelstoke, British Columbia. The first part of the range may have been taken from the actual *R. hesperius* Piper, and the specimens which Focke described were probably from Revelstoke.

BRITISH COLUMBIA: near mouth of Dowrie Creek, 1905, *Shaw 1117*.

GLABRATI

This group comprises the subgenera *Chamaebatus* and *Orobatus* of Focke, which I can not separate, the former comprising the more dwarf and simple-leaved species; but many of the *Orobati* have also simple leaves, and *R. pumilis* has sometimes three-foliolate ones. The species mentioned is the type of Greene's genus *Cardiobatus.*

Rubus pumilus Focke must be a very local species. The only specimens I have seen (the type has not been available) are the following:

MEXICO: Ixtaccituatle, 1903, *Purpus 241.*

CHIHUAHUA: Mt. Mohinora, 1898, *Nelson 4863.*

Rubus nivalis Dougl. Mr. J. M. Macoun thought that the descriptions of this species in Hooker's Flora Boreali-Ameircana and in Howell's Flora of Northwestern America did not apply to the same species and substituted the name *R. pacificus* for the latter. I can not see why Howell's description does not apply to *R. nivalis* Dougl. Focke has the same idea of *R. nivalis* Dougl. as myself.

Rubus glabratus H.B.K. This species of wide distribution in the Andes of South America has been reported from Costa Rica (*Pittier 167*); but I have seen no specimens from there, neither had Dr. Focke.

ROSAEFOLII

This group comprises the *Spectabiles*, *Rosaefolii*, and perhaps some other sections of Focke's subgenus *Idaeobatus.* The *Spectabiles* constitute the Greenean genus *Paramena* as originally constituted, but its author on some subsequent pages extended the genus to include simple-leaved species of the section *Corchorifolii* of Focke.

Rubus spectabilis Pursh. This is usually described as being unarmed. Occasionally, however, it has a few small straight prickles. Prickles are more common in the next species.

Rubus franciscanus Rydb. This has been mistaken for *R. Menziesii* Hook., which, however, is the same as *R. ursinus*, as pointed out by Dr. Focke. This mistake depended perhaps on the suggestion made in Hooker's Flora that the petals were probably red. Watson, therefore, named the present species *R. spectabilis Menziesii* and Greene included it in *Parmena* under the name *P. Menziesii.*

Rubus rosaefolius has been collected growing spontaneously on several of the West Indian islands, such as Guadeloupe, St. Kitts, and Porto Rico.

IDAEI

This group consists of the section *Idaeanthi* of Focke's subgenus *Iaeobatus* and Greene's genera *Melanobatus* and *Batidaea.* Greene admitted seven species of the former and eighteen species of the latter, if *Rubus idaeus*, which he evidently regarded as the type but did not name under *Batidaea*, is counted. It is impossible for me to follow him in the segregation of these species of *Batidaea.* Many of them are based on only occasional or abnormal forms or mere individual variation. Except two of his species of *Batidaea* (viz., *B. arizonica* and *B. Itascica*) and *Rubus idaeus*, they may all be regarded as geographical varieties or subspecies of *R. strigosus. Batidaea arizonica* Greene is the best of all the species proposed and, in whatever way the others may be treated, this I think should under all circumstances be regarded as a distinct species. *Batidaea Itascica* Greene was based on one single specimen which I can but refer to the European *Rubus idaeus*, which is escaped in this country. See further remarks under the different species of the group.

Rubus phoenicolasius Maxim. This is in cultivation and has been naturalized in the eastern States. It is distinguished from our native species in the densely red-bristly stem and the small red incurved petals. The following specimens have been seen:

NEW YORK: Spuyten Duyvil, *Rydberg.*

NEW JERSEY: Little Silver, 1890, *Lorett;* Atlantic Highlands, 1906, *Britton & Hollick.*

CONNECTICUT: Fairfield, *Eames 5532.*

DISTRICT OF COLUMBIA: Eckington, 1897, *Irwin.*

PENNSYLVANIA: Lancaster County, 1911, *Carter.*

Rubus ellipticus Smith. This is also in cultivation in warmer parts of North America and has established itself in the West Indies. If it were not for the yellow fruit, which comes off as a thimble, this species would be included in the *Adenotrichi* group of blackberries. To this belongs the following specimen:

JAMAICA: Cinchona, 1905, *Harris 9131.*

Rubus glaucus Benth. This was originally described from Ecuador, but has since been found in Colombia and Costa Rica.

Specimens which I refer here rather than to *R. eriocarpus* have been collected in Mexico. These are not typical and may represent a distinct species, closer, however, to *R. glaucus* than to *R. eriocarpus.*

COSTA RICA: Buena Vista, 1903, *Cook & Doyle 36;* 1874, *O. Kuntze.*

GUATEMALA: Tres Cruces, 1889, *John Donnell Smith 1622.*

Specimens collected near Cuernavaca, State of Morales, Mexico, by Rose and Hough are remarkable, not only for the station at which they were collected, this being much further north than the formerly known range extended, but also for the large size of the leaves, the leaflets of some of the leaves of the stem being up to 15 cm. long, and for the more glandular pedicels.

MORELOS: Cuernavaca, May 27–30, 1899, *Rose & Hough 4410, 4414.*

Rubus eriocarpus Liebm. This as well as the preceding has been determined as *R. occidentalis*, which is not found in any part of Mexico or Central America. All so named belong to one of the three species of *R. glaucus*, *R. eriocarpus*, or *R. Pringlei.* The following specimens belong to *R. eriocarpus:*

VERA CRUZ: Vera Cruz, 1901, *Rose & Hay 6183;* San Miguel del Soldado, 1899, *Pringle 8113;* Jalapa, 1899, *Rose & Hough.*

OAXACA: Chinantla, *Liebman 1692.*

PANAMA: El Boquette, 1911, *Pittier 3135.*

Rubus Pringlei Rydb. This has also been confused with *R. occidentalis.* Focke in 1891 described it as var. *grandiflora*, but twenty years later, having evidently forgotten its first name, redescribed it as var. *mexicana.* It is evidently the same as described in 1839 by Schlechtendal as var. *incisus*, but neither of these varietal names could be used as specific. Therefore, I took the pleasure of naming the species after Mr. C. G. Pringle, who has collected the best specimens of this I have seen.

HIDALGO: Pachuca, 1899, *Rose & Hough 4463;* 1901, *Rose & Hay 5553.*

OAXACA: Sierra de San Felipe, *Pringle 4686;* Salazar, 1903, *Rose & Painter 7008.*

MEXICO: between Toluca and Mexico City, June 28, 1910, *Rusby 317.*

Rubus occidentalis L. This is confined to the United States and Canada, east of the Rocky Mountains. Specimens from the west which have been referred to *R. occidentalis* belong to *R. leucodermis* Dougl., *R. glaucifolius* Kellogg, or *R. bernardinus* (Greene) Rydb. This was made the type of the genus *Melanobatus* Greene.

Rubus leucodermis Dougl. *Melanobatus leucodermis* Greene. This takes the place of *R. occidentalis* west of the Rockies from British Columbia and Montana to Utah and central California. In southern California its place is taken by *R. bernardinus*.

Rubus glaucifolius Kellogg. Kellogg's specific name was adopted by Dr. Greene under *Melanobatus*, but the only specimens seen labeled *M. glaucifolius* in Greene's handwriting are in his private herbarium and were collected by himself at Eureka, Siskiyou County. These specimens belong to *R. leucodermis*. *R. occidentalis* and *R. leucodermis* are never glandular, while *R. glaucifolius* and *R. bernardinus* are so in the inflorescence. The following specimens belong here.

CALIFORNIA: Mt. Sanedrin, Lake County, 1902, *Heller 6040;* Emigrant Gap, 1882, *M. E. Jones, 3309;* Forest Ranch 1896, *Mrs. Austin 113;* Mt. Pleasant, Spanish Peak Range, 1909, *Leiberg 5161.*

OREGON: Rabbit Ears, south slope of Umpagre Divide, *Applegate 2643.*

Rubus bernardinus (Greene) Rydb., *Melanobatus bernardinus* Greene. This is closely related to *R. glaucifolius* and perhaps not specifically distinct. Its range is, however, much more southern. Rusby's specimens from New Mexico are referred here doubtfully. They are from a locality so far from the known range of the species and no specimens of a black raspberry have been found anywhere between Southern California and Rusby's station. To *R. bernardinus* belong:

CALIFORNIA: San Bernardino Mountains, 1901, *Parish 5046;* Strains Camp, Los Angeles County, 1902, *Abrams 2584;* Los Angeles County, 1899, *Chamberlain.*

NEW MEXICO: Mogollon Mountains, July 15, 1881, *Rusby 123.*

Rubus nigerrimus (Greene) Rydb. This was originally described as *R. hesperius* by Piper. As that name was preoccupied, Focke in 1911, substituted *R. transmontanus*, but misapplied the name to another species related to *R. pubescens*. In the meantime Dr. Greene had named it *Melanobatus nigerrimus*.* It is more closely related to the eastern *R. occidentalis* than to the western *R. leucodermis*, but differs from both in the lack of tomentum. The following specimens have been seen:

WASHINGTON: Wawawai, 1894, *Piper 1788;* 1897, *Piper;* Alamota, 1894, *Piper 1553;* damp woods, Columbia River, West Kickitat County, 1883, *Suksdorf* (both in flowers and fruit).

Rubus idaeus L. This European species is sometimes cultivated in this country and has occasionally established itself. It has not a trace of glandular bristles. The inflorescence has small weak prickles, sometimes bristle-like but never gland-bearing. In cultivation forms are found with the habit of *R. idaeus* with a few glandular hairs, but these forms are to be regarded as hybrids between it and *R. strigosus*. *Batidaea Itascica* Greene is evidently a synonym of this species. The following specimens belong here:

NEW YORK: 1879, *L. F. Ward.*

WASHINGTON: Watesburg, 1897, *Horner 160.*

MINNESOTA: Lake Itasca, *Sandberg 1173* (type of *Batidaea Itascica* Greene).

CONNECTICUT: Bridgeport, *Eames 5053a.*

NORTH DAKOTA: Minot, 1907, *Lunell.*

Rubus melanotrachys Focke. This was described seventeen years ago by Focke. In the same article he treats it both as a species and as a subspecies of *R. idaeus*. Of all the North American forms this is closest to *R. idaeus*, being non-glandular, but the young branches, petioles and inflorescence are sparingly pilose or glabrate, instead of finely tomentose. The only specimen seen by me is the following, which has been referred to *R. idaeus* by Fernald.†

IDAHO: Cedar Mountain, Latah County, *Piper 2879.*

Rubus arizonicus (Greene) Rydb. (*Batidaea arizonica* Greene).

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* The other two species of *Melanobatus* of Greene, viz., *M. neglectus* and *M. michiganus*, are based on a hybrid, *R. occidentalis* × *strigosus* (*R. neglectus* Peck), the former being the more common form, resembling most one parent, *R. occidentalis*, while the latter represents the form more like *R. strigosus*.

† See Rhodora **2**: 198. 1900.

This is the best species of *Batidaea* proposed by Greene. It is characterized by the toothing of the leaves and by the fact that the leaves of the floral branches are usually pinnately 5-foliolate, while in all the other species they are, as a rule, 3-foliolate or simple.

ARIZONA: Fly Peak, *Blumer 1260; Jones 6056d;* San Francisco Mountains, *MacDougal 258, 373; Toumey 116; Pearson 329; Coville 1125, 1054; Wooton; Leiberg 5756;* Santa Catalina Mountains, *Livingston & Thornber;* Huachuca Mountains, *Goodding 145, 325.*

NEW MEXICO: *Standley 7705, 6707, 6138; Goldman 1672, 1598;* Mogollon Mountains, *Metcalfe 373;* Hillsboro Peak, Black Range, *Metcalfe 1202;* Chloride, 1909, *Goldman 1759;* Capitan Mountains, 1903, *Grant 76;* Winsor's Ranch, 1908, *Standley 4090.*

CHIHUAHUA: Colonia Garcia, *Townsend & Barber 87.*

Rubus strigosus Michx. To my mind there is no doubt that this species is specifically distinct from *R. idaeus* L. Fernald in discussing the occurrence of *R. idaeus anomalus* Arrh. in America* treated also of the relationship of *R. strigosus* and *R. idaeus* and made the statement: "Upon this character—the presence or absence of glands—rests the separation of the American *Rubus strigosus* and the European *R. idaeus.*" While this is the most striking difference, it is not the only one. *R. idaeus* never has glands, *R. strigosus* is exceedingly rarely, if ever, without some trace of glands of some kind. The prickles in the inflorescence and on the petioles of *R. idaeus*, although weak, nearly always are somewhat flattened and slightly curved. This is never the case in *R. strigosus.* If the latter is without glands, it is without prickles and bristles. In *Rubus idaeus* the young stems, rachis and petioles of the leaves, peduncles and pedicels are more or less finely tomentulose. This is not the case in the typical eastern *R. strigosus.* In the high northern plant (*Batidaea subarctica* Greene), which has been included in *R. strigosus*, the inflorescence is pubsecent but not of the fine character found in *R. strigosus.* Fernald claims that the American plant sometimes is without glands, and cites two specimens, *John Macoun 4550* and *Rydberg 657.* I have not seen the former, but there are specimens of the latter in the herbarium of Columbia University, in that of the New York Botanical Garden, and in the United States National Herbarium. All these specimens are apparently glandless, but a closer examination shows there are some minute glands, mostly sessile, both on the pedicels and the hypanthium. They represent a rather abnormal form belonging to the western so-called *R. strigosus*, i. e., *R. melanolasius* Focke, and constitute the type of *Batidaea dacotica* Greene. Fernald also cites *Piper 2879* as a specimen also approaching *R. idaeus.* This number belongs to *Rubus melanotrachys* Focke. Fernald evidently overlooked the difference in the pubescence of the inflorescence, which is pilose instead of tomentulose. He also stated: "Often, too, shrubs growing in shade show a strong tendency to lose not only the glands of the calyx, but the white pubescence ordinarily characteristic of the leaves." This is perfectly true and in both *R. idaeus* and *R. strigosus* the leaves are sometimes almost without tomentum. The two specimens cited, however, were a somewhat unfortunate selection, for both *Piper 2268* and *Sandberg, MacDougal & Heller 259*, belong to *Batidaea peramoena* Greene, which should be separated from *R. strigosus*, at least as a variety. The sepals are of a different shape, much narrower than in the eastern *R. strigosus.* No typical *R. strigosus* with rather firm rugose leaves, dark green above, is found in the Rockies or west thereof. All the following species may be regarded by conservative botanists as varieties of *Rubus strigosus*, though this as well as *R. arizonicus* and *R. melanotrachys* must be regarded as distinct from *R. idaeus.* Robinson and Fernald in the New Gray's Manual adopt the name *Rubus idaeus aculeatissimus* Regel & Tiling for *R. strigosus* Michx., which was unwarranted, for Regel and Tiling's variety is the same as *R. sachalinensis* Lev.,* a species or subspecies with almost dry fruit and limited to eastern Asia.

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* Rhodora 2: 195–200. 1900.

Batidaea heterodoxa Greene is but a form of *R. strigosus*, and one that is not uncommon with the upper leaves, simple and three-lobed. It has nothing to do with *Rubus Egglestonii* Blanchard or what Fernald regarded as *R. idaeus anomalus* Fries, of which it is given as a synonym in Gray's New Manual. *Batidaea elegantula* Greene is in my opinion a rather typical *R. strigosus*, while *B.*

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* See Focke, Bibl. Bot. 17^{72}: 210. 1911.

amplissima Greene is a shade-form with coarser teeth and in age practically no tomentum on the lower surface of the leaves. The younger leaves of the type specimen, however, are tomentose beneath.

Rubus melanolasius Focke is the Rocky Mountain representative of *R. strigosus*. If it should be treated as a species or a geographical variety of *R. strigosus* is questionable. It is low in stature, much more bristly and glandular, some of the bristles are often stout, prickle-like, and more or less flattened but straight; the leaves are thinner, light green above, the sepals are shorter and broader, and the fruit is much more acid. It is rather variable. *Batidaea Sandbergii* is the typical form; *B. laetissima* Greene, a paler plant with light green foliage, from exposed situations in Colorado; *B. dacotica* Greene, a nearly glandless form, and *B. unicolor*, a shade form almost without tomentum on the lower surface of the leaves; none of them worth even a varietal name, scarcely worth mentioning as a form.

Rubus acalyphaceus (Greene) Rydb. This was based on *Batidaea acalyphacea* Greene. It is very problematic if this should be regarded as distinct from the last species as the only difference is the pubescent stems. If it were not for the fact that these pubescent specimens are found in only a part of the range of *R. melanolasius*, I should have regarded *B. acalyphacea* as another synonym of that species. *Batidaea subcordata* Greene is the more common form of the same. It is the more appropriate name of the species and represents the normal form, and would have been used if the name *B. acalyphacea* had not had page priority.

Batidaea cataphracta Greene is intermediate between *B. acalyphacea* and *B. subcordata* but depauperate and densely white tomentose on the lower surface of the leaves. *B. filipendula* Greene is a light-colored form, depauperate, with more slender pedicels.

WYOMING: Silver Gate, Yellowstone Park, 1900, *Mearns 2353;* Lower Golden Gate, *Mearns 2553;* Leucite Hills, 1901, *Merrill & Wilcox 677.*

UTAH: Dyer Mine, 1902, *Goodding 1260.*

NEVADA: Clover Mountains, 1908, *Heller 9232.*

IDAHO: Trinity Lake region, 1910, *Macbride 659.*

Rubus peramoenus (Greene) Rydb., based on *Batidaea peramoena* Greene, differs from *R. melanolasius* in the more slender habit, in the less numerous bristles, but above all in the narrower, gradually long-acuminate sepals. The leaves are thin, almost without tomentum beneath. It is represented by specimens from

IDAHO: *Leiberg 1105; Sandberg, MacDougal & Heller 259.*

MONTANA: *Kirkwood & MacDougal 263, 264.*

OREGON: *Brown 85, 88; Cusick 1729; Sheldon 8161.*

WASHINGTON: Spokane, *Piper 2268.*

BRITISH COLUMBIA: *Dawson 7040.*

Rubus viburnifolius (Greene) Rydb., *Batidaea viburnifolia* Greene, differs from the last only in being lower, densely bristly, leaves strongly plicate and strongly veined. It therefore stands nearer *R. melanolasius* than *R. peramoenus* does, but it has the narrow sepals of the latter species. It may be a high mountain and subarctic form of *R. peramoenus.*

The following specimens belong here:

BRITISH COLUMBIA: Glazier, 1909, *Rusby;* Similkameen River, *J. M. Macoun 69970;* Emerald Lake, *Shaw 136;* Roger's Pass, 1904, *Shaw 472.*

ALASKA: Lake Illiamna region, 1902, *Gorman 26;* Rampart, 1901, *Jones 44, 36;* Kenai, 1901, *Nielson 47;* Yukon River, 1903, *Hollick.*

YUKON: fifty miles above Stuart River, 1899, *Gorman 1093;* Hunter Creek, *John Macoun 58470;* Dawson, *Williams 1; Tarleton 162b.*

MONTANA: Gallatin River, 1905, *Blankinship 163;* Midvale, *Umbach 373.*

ALBERTA: base of Tunnel Mountain, 1897, *McCalla 2096;* Lake Louise, *J. M. Macoun 65104.*

Rubus subarcticus (Greene) Rydb., *Batidaea subarctica* Greene. Most of the high northern specimens of what have been called *R. strigosus* have more or less pubescence on the inflorescence and young parts of the stem and branches; the stem is also much more glandular-bristly, and the sepals broader, shorter and more abruptly acuminate. If these forms should be separate from *R. strigosus* or not is hard to tell. I hesitated for a long time in giving them a name, but I found that they grew commonly in

Alaska and Yukon, and that *Batidaea subarctica* Greene was based upon them. I therefore admitted this as a questionable species. It is probably the same as *Rubus idaeus canadensis* Richards. Numerous specimens have been seen from Alaska, Yukon, and Athabasca, where it is the common species. The following eastern specimens also belong here:

NEWFOUNDLAND: 1894, *Robinson & Schrenk; Waghorne; Howe & Lang 919; Sornberger 223;* St. Johns, *Williamson 814.*

LABRADOR: Lanse au Clair, 1894, *Waghorne.*

ST. PIERRE: Bois Brulé, *Arsène.*

QUEBEC: Seven Islands, *C. B. Robinson 864;* Bic, *Williamson 1217.*

NOVA SCOTIA: Yarmouth, *Howe & Lang 71.*

MICHIGAN: Houghton, 1893, *Ely.*

MINNESOTA: Duluth, *Rydberg 8305.*

Rubus carolinianus Rydb. All the specimens referred to *R. strigosus* from the mountains of North Carolina differ from the ordinary *R. strigosus* of the northern states in the densely retrorsely glandular hispid and also puberulent stem. Besides, I have seen no specimens whatever of any red raspberry from any station between northern Virginia and the mountains of North Carolina. *R. carolinianus* may be nothing more than a geographical variety of *R. strigosus*, but as it evidently stands in the same relation to it as *R. melanolasius*, *R. peramoenus*, *R. viburnifolius*, and *R. subarcticus*, I admitted it as a species in the North American Flora.

NORTH CAROLINA: Mt. Mitchell, 1897, *Biltmore Herbarium 5685;* Black Mountain, 1853, *Gibbes;* Andrews Bold, Great Smoky Mountains, *Beardslee & Kofoid.*

Rubus Egglestonii Blanchard. This was first recorded as *R. idaeus anomalus* Arrh. by Fernald,* but it is not the same as the European plant. Mr. Blanchard† points out that it stands in somewhat the same relation to *R. strigosus* that var. *anomalus* does to *R. idaeus*, glandular hairs being present in *R. strigosus* and *R. Egglestonii*, but absent in *R. idaeus* and the var. *anomalus*. The latter is closely related to *R. idaeus*, differing in no respect from *R. idaeus* except in the usually simple, entire or lobed and rounded leaves (or leaflets if the leaf happens to be compound, which is seldom the case). *Rubus Egglestonii* differs more from *R. strigosus*, viz., in the elliptic, obtuse, merely mucronate sepals, the slender habit, and small leaves. In my opinion, it is a distinct species, perhaps derived from *R. strigosus*, or perhaps a hybrid between the latter and *Dalibarda repens* L. The rarity of well-developed fruit and the poorly developed pistils would suggest hybrid origin. Botanists who have the chance of seeing it in the field are urged to follow up this suggestion.

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* Rhodora **2**: 195. 1900.

† Torreya **7**: 140. 1907.

URTICIFOLII

Rubus trichomallus Schlecht. This has been merged into *R. urticifolius* and Dr. Focke still regards it as synonymous with that species, but I think that it should be held distinct. The South American plant has a compact inflorescence and ovate sepals, which are soon reflexed. The Mexican and Central American plants on the contrary have a looser inflorescence, ovate, lanceolate sepals, closing around the young fruit, and only in age becoming spreading. The following specimens belong to *R. trichomallus:*

COSTA RICA: Santiago (east of Cartago), April 20, 1906, *Maxon 81;* Vulcan Irazu, June 1874, *O. Kuntze* (labeled *R. costaricanus*); Turrialva, June 21, 1874, *O. Kuntze 2245*.

Rubus ferrugineus Wikst. This seems to have been a lost species. However, it has been collected again on the same island from which it was originally described, viz., Guadeloupe, but it has been mistaken for *R. jamaicensis*, from which it is easily distinguished by the long, non-glandular hairs on the stem. Only one typical specimen has been collected outside of Guadeloupe, and strange enough, this comes from Mexico. A plant very closely related to it if not the same species is common in northern South America, but in this the inflorescence is more open and the sepals narrower. If not to be referred to *R. ferrugineus* it represents an undescribed species. The following specimens are referred to *R. ferrugineus*.

GUADELOUPE: 1893, *Père Duss 2215*.

MEXICO: near Tunbala, Chiapas, October 26, 1895, *E. W. Nelson 3305*.

ADENOTRICHI

Rubus adenotrichos is characterized by its long glandular hairs on the stem, its strongly armed petioles and petiolules, glabrous drupelets and rather broad leaflets, densely tomentose beneath. In the Torrey herbarium there is a duplicate of the type. In the herbarium of the New York Botanical Garden there is one of Liebmann's specimens with still broader leaflets, and shorter glandular hairs, approaching *R. costaricanus*, with which species this has been confused. Otto Kuntze referred his specimens to that species, but collected, also, specimens of the true *R. costaricanus*. The following specimens belong here:

VERA CRUZ: Jalapa, *Schiede* (type); Orizaba, 1853, *Fred Mueller 3001;* near Jalapa, 1900, *Pringle 8346* (erroneously named *R. coriifolius*); Mirador, 1841–43, *Liebmann 1675*.

OAXACA: Sierra de San Felipe, 1894, *Pringle 4695*.

COSTA RICA: June, 1874, *O. Kuntze;* Cartago, August 24, 1874, *O. Kuntze 2207*.

Rubus costaricanus differs from *R. adenotrichos* in the broader leaflets, more than half as broad as long, the short glandular hairs, scarcely longer than the other pubescence, the dense inflorescence and the few large drupelets. The New York Botanical Garden has received from Copenhagen a duplicate from Professor Oersted's collection. This is duplicated by the specimens collected by Otto Kuntze.

COSTA RICA: Cartago, 1845–48, *Oersted 1689;* Costa Rica, June, 1874, *O. Kuntze;* Turrialva, June 21, *O. Kuntze 2235;* Vulcan Irazu and Cartago, June 1874, *O. Kuntze;* Hacienda Belmira, near Santa Maria de Dota, 1898, *Tonduz 11615*, *1450;* Parrita Grande du Copey, 1898, *Tonduz 11726* in part.

Rubus Verae-Crucis Rydb., described in the North American Flora, is related to *R. adenotrichos*, but differs in the pubescence, the leaves being nearly glabrous beneath and the stem with short glandular hairs. The species is only known from the type locality. New shoots were also collected in 1899, *Rose & Hough 4295*. Besides these I have seen only the following specimen, *Pringle 8177*.

Rubus irasuensis Liebm. The New York Botanical Garden has received from Copenhagen a specimen from Professor Liebmann's type collection of this species. The species is more common than expected, having been confused with both *R. adenotrichos* and *R. poliophyllus*. It is related to the former, but the glandular hairs of the stem are much shorter, scarcely longer than the other pubescence and the drupelets are slightly hairy at the apex. The following specimens belong to it:

COSTA RICA: Mount Irazu, 1847, *Oersted 1699;* Parrita Grande du Copey, 1898, *Tonduz 11726* in part; San Francisco de Guadeloupe, February 1893, *Tonduz 7304*.

GUATEMALA: Mizco, Dept. Guatemala, February, 1892, *John Donnell Smith 2534* (labeled *Rubus adenotrichos* var. *floribus roseis*); Volcan de Fuego, Dept. Zacatepeques, March 1892, *2535* (this was determined as *R. poliophyllus*); Antigua, February 1908, *Kellerman 7455;* Volcan d'Agua, February 15, 1905, *Kellerman 4775;* Ravanal, August 15, 1860, *Sutton Hayes*.

Rubus miser Liebm. seems not to have been collected since Oersted's time in Costa Rica. The only specimen seen resembling it comes from Guatemala and in this many of the leaves are five-foliolate. The species differs from *R. adenotrichos* in the small racemose inflorescence and the short glandular hairs.

COSTA RICA: Cartago, 1845–48, *Oersted 1700*.

GUATEMALA: Sapote, Dept. Guatemala, March, 1890, *John Donnell Smith 1972*.

SCANDENTES

Rubus scandens Liebm. This species is well described by Liebmann, but for some reason it has seldom been correctly identified, perhaps on account of the description of the fruit. Liebmann describes this as being red, with few drupelets falling off separately. In Liebmann's specimens, of which one is in the herbarium of the New York Botanical Garden, the drupelets are a dozen or less mostly fallen off. Dr. Focke describes the fruit as being red or dark purple and composed of six to eight large drupelets. In Nelson's specimens the drupelets are up to twenty, but the plants are in other respects identical with Liebmann's specimens. The following specimens have been seen:

VERA CRUZ: Mirador, March, 1841, *Liebmann 1701;* same locality, February 1894, *E. W. Nelson 194;* Zacuapan, January 1905, *Purpus 2953;* Canton de Huatusco, December, 1898, *Conzatti*.

Rubus fagifolius Cham. & Schlecht. I have seen no specimens of this species, but both Schlechtendahl's and Liebmann's descriptions, as well as the illustration given by Focke, show clearly that it is closely related to, but perfectly distinct from, *R. scandens.*

FLORIBUNDI

Rubus philyrophyllus Rydb. This species was first described as *R. tiliaceus* by Liebmann, but afterwards the name was changed to *R. tiliaefolius* by Dr. Focke on account of the earlier *R. tiliaceus* Smith. When proposing the new name Dr. Focke knew that there was a *Rubus tiliaefolius* Weihe, but he claims that the latter is a synonym and hence the name is available. There is a difference of opinion concerning this fact, and some authors regard also *R. tiliaceus* Smith as a synonym, which would make *R. tiliaceus* Liebm. available. The use of homonyms will always cause confusions and an unstable nomenclature. The permitting of the use of homonyms is one of the few features which makes it impossible for me conscientiously to subscribe to the, in general, excellent Vienna Code. I have seen no specimens, only a photograph of Liebmann's type. The leaf-form is, however, very distinct. Only two species and these of the *R. sapidus* group have leaflets approaching those of this species in outline, but in both the fruit is glabrous.

Rubus Liebmannii Focke. The specimens collected at Cerro de Sempoaltepec, Oaxaca, were included in *R. tiliaceus* by Professor Liebmann. The leaves of these specimens are quite different from those of the type of *R. tiliaceus.* In the herbarium of the New York Botanical Garden there are two photographs, one from the specimen in Liebmann's herbarium with Dr. Focke's label on it, the other from the specimen in Dr. Focke's own herbarium. The following specimens, which agree with these photographs as well as with Focke's description, I refer to this species.

OAXACA: northwestern slope of Mt. Zempoaltepec, July 10, 1894, *E. W. Nelson 675.*

VERA CRUZ: Orizaba, 1853, *Fred Mueller 1341.*

Rubus coriifolius Liebm. was described by Liebmann as having few carpels and rose-colored petals. One of Liebmann's specimens in fruit is found in the herbarium of the New York Botanical

Garden, and in this the drupelets are eight to ten, but in Pringle's specimen from Orizaba, they are twelve to twenty. The petals are about as large as those of *R. Schiedeanus*. They were described as pink, but they are often pure white. The following specimens I refer to this species:

VERA CRUZ: Mirador, February, 1842, *Liebmann 1688;* hill near Orizaba, February 3, 1895, *Pringle 5925*.

OAXACA: Totontepec, July 15, 1894, *E. W. Nelson 773;* between Juquila and Nopala, March 4, 1895, *2424*.

Rubus Schiedeanus Steud. This differs from the preceding species mainly in the toothing of the leaflets. In this the teeth are very small, more distant or obsolete; in *R. coriifolius* they are irregular, large and sharp, lanceolate, close together and directed forward. I have seen only the following specimens:

VERA CRUZ: Mirador, February, 1842, *Liebmann 1705;* near Jalapa, April 2, 1899, *Pringle 8086*.

Rubus macrogongylus Focke. In the original description Dr. Focke does not cite any specimens. Some time ago I wrote him and he kindly sent me a photograph of the type and wrote a letter, from which I hereby give the following extract: "The best characteristic for *Rubus macrogongylus* is or seems to be the shape of the fruit, which is *elongated* and consists of about 100 or more perfect carpels. In the flowering branches most of the leaves are quinate. The sepals are loosely reflexed in flower, afterwards they embrace the base of the fruit. At first I saw such plants in Donnell Smith Guatem., 4472, but the materials were not sufficient for describing and naming them. I suggest that Donnell Smith Guatem. 4178 will prove to be a form of the same species. Some years ago I met with, in the Berlin Herbarium, several flowering or fruiting specimens from Mexico. The panicle in these plants was much more developed than in the Guatemala ones, but I cannot distinguish leaves, tomentum, serrature, flowers or fruits. I send a photo of a flowering branch from Mexico. I think that the Mexican specimens represent the true face of the species, and that those from Guatemala are somewhat scraggy forms."

The photograph was labeled "*Rubus macrogongylus* Focke, S. Mexico Ex hb. Berlin." There was no indication of the collector or date. Besides the two numbers of Captain John Donnell Smith's collection, cited by Focke in his letter, I have seen only a fragment, which I refer doubtfully here.

GUATEMALA: 1906, *Kellerman 5217*. (This was determined as *Rubus guyanensis*, to which it evidently does not belong.)

Rubus Smithii Rydb. This was orignally described as *R. poliophyllus* by Focke, but there is an older *R. poliophyllus* O. Kuntze. As it was based on *R. coriifolius* Focke in Enumeratio Plantae Guatemalensis, which appeared without description, *John Donnell Smith 2141* must be regarded as the type. Focke also cites *Seler 879* from Atlamaltatle, Hidalgo, Mexico, and *Smith 2533* and *2535* from Guatemala. The last number, at least as represented in Captain Smith's herbarium, does not belong to the same species as the others, but to *R. irazuensis* Liebm. Also *Kellerman 4775*, from Guatemala, and *Tonduz 11726*, from Costa Rica, both named *R. poliophyllus* belong to *R. irasuensis*. *Pittier 2281* and *Tonduz 7837* both from Costa Rica and both named *R. poliophyllus* belong to *R. Pittieri*.

Rubus Uhdeanus Focke. In the herbarium of the New York Botanical Garden, there are two photographs of and scraps from the type collection of this species, kindly sent us from the Royal Botanic Garden at Berlin. Besides these I have seen no speciment that could be referred to this species except the following:

MEXICO: Sierra de Ajusco, *Pringle 8279*.

Rubus Pittieri Rydb. This is somewhat related to *R. Uhdeanus*, having the same pubescence and more or less glandular inflorescence, but the branches and petioles are densely villous and the inflorescence more distinctly prickly. The plant therefore approaches the *R. sapidus* group, if it should not be included in the same; the plant, however, judging from the specimen seen, does not climb over bushes and rocks but is an erect shrub. In some respects it resembles *R. coriifolius*, but the petals are much smaller, and the drupelets smaller and more numerous. Dr. Focke refers the type number of this species to *R. poliophyllus* Focke, i. e., *R. Smithii* Rydb., to which disposition I cannot agree. The following specimens belong here:

COSTA RICA: Paramos de l'Abejonal, May 4, 1890, *Pittier 2281*; same locality, April, 1893, *Tonduz 7837*.

Rubus abundus Rydb. This name was substituted for *R. floribundus* H.B.K., which is a homonym. This has been reported for Central America, but I have not seen any material from there; I have, however, seen several specimens from Venezuela and Colombia. Otto Kuntze collected the species near Caracas, but referred it to varieties of *R. jamaicensis.* The following varietal names appear on his labels: *floribundus*, *normalis*, and *nudicaulis.* Though related to *R. jamaicensis,* it is easily distinguished from the same by its densely villous-velutinous leaves, which are deeply cordate at the base and never white on the lower side, and by its dense inflorescence and ovate, instead of lanceolate, sepals. Dr. Focke described a subspecies *Selerianus* of this species from material collected in Mexico, *Seler 2096,* which I have not seen.

Rubus laxus Rydb. was described in the North American Flora. It was also described by Dr. Focke as *Rubus adenotrichos leptaleos,** but is not related to *R. adenotrichos.* It is related to the preceding, but differs in the open inflorescence, divergent branches of the same, the smaller flowers, the narrower and less or not at all cordate leaflets and shorter and finer pubescence. Specimens seen are the following:

GUATEMALA: Zamorora, Dept. Santa Rosa, *Heyde & Lux 4474;* Volcan Jumaytepeque, Santa Rosa, *Heyde & Lux 4473.*

Rubus jamaicensis L. This seems to be confined to the island of Jamaica. Specimens so named from South America belong to *R. abundus*, *R. alpinus*, or other related species. Mr. John Hart, Superintendent of the Cinchona Plantation, has collected specimens with the terminal leaflet of the lower leaves very broadly cordate and the inflorescence more compact. These approach somewhat *R. abundus.*

Rubus alpinus Macf. Unfortunately, I have not seen the original description published by Macfadyen. The descriptions given by Grisebach and by Focke do not fully agree. The former describes the plant, as well as *R. jamaicensis*, as shrubby, trailing, and the drupelets as numerous; the latter describes the plant as climbing and the drupelets as twenty to thirty. The plant found in Jamaica and the only one which agrees in any way with the descriptions of *R. alpinus* is a plant closely related to *R. jamaicensis*, but without the white tomentum on the lower surface of the leaves and being in all respects less pubescent. This has the same habit as *R. jamaicensis*, being reclining over bushes. Grisebach compares it with *R. fagifolius*. This was probably the reason why Focke transferred it to his subgenus *Lampobatus* and associated it with *R. fagifolius* and *R. scandens*. For my part it seems as if the Jamaican plant was unknown to Dr. Focke. Under any circumstances, the plant which I take for *R. alpinus* is the same as *R. guyanensis* Focke. At least I have not been able to find any differences. A photograph and some fragments of the type of *R. guyanensis* were kindly sent me from the Botanical Garden at Berlin and these are exactly like Shreve's specimens of *R. alpinus* from Cinchona, Jamaica. Other specimens from Guiana are the same. Otto Kuntze's specimens from Venezuela are similar but more pubescent, at least on the veins of the under side of the leaves. Specimens collected near Cinchona, *Harris 9141*, have the leaves more pubescent beneath, and may be hybrids with *R. jamaicensis*.

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* Bib. Bot. 83: 70. 1914.

Rubus vulcanicola (J. D. Smith) Rydb. is closely related to the preceding and mainly distinguished by the mostly five-foliolate and more shining leaves, and longer pink or rose petals. I have seen the following specimens:

COSTA RICA: Volcan Poas, March 1896, *John Donnell Smith 6495;* 1896, *Tonduz 10907;* Rancho del Achiote, Volcan Poas, 1889, *Pittier 806;* Volcan Barba, 1890, *Tonduz 2120*.

SAPIDI

Rubus Nelsonii Rydb. is probably related to *R. sapidus* but differs from that species as well as from its other relatives in the narrower, long-acuminate leaflets, and also in its terete stem. It is known only from the two sheets of the type collection.

Rubus amplior Rydb. is related to *R. sapidus*, but differs in the terete stem, the dark green and firm leaflets, these being less cordate, and having broader teeth. Known only from the type collection.

Rubus Palmeri Rydb. is closely related to *R. sapidus*, but the leaves are lighter green, the inflorescence somewhat glandular, as well as villous-tomentose and the teeth of the leaves are broader and shorter, and less strongly directed forward. To this species belong:

DURANGO: San Ramón, 1906, *Palmer 78.*

JALISCO: mountains near Talpa, March 7, 1897, *E. W. Nelson 4019;* between Dolores and Santa Gertrudis, August 7, 1897, *Rose 2039.*

Rubus sapidus Schlecht. A duplicate of the type of this species is in the Torrey herbarium. Typical specimens have been collected near the type station (Jalapa), *Pringle 8071.* These were wrongly determined as *R. huministratus* Steud., which species belongs to another group of the genus. Dr. Focke has included *R. sapidus* in the *Suberecti,* in which section he also included our *Arguti. R. sapidus* has subcoriaceous leaves, as most Mexican species have, and is not an erect plant.

Rubus Tuerckheimii Rydb. This is evidently also related to *R. sapidus,* but differs from all the species of this group in the small petals. It is perhaps most closely related to *R. amplior,* but differs in the finer and more regular toothing of the leaflets, the more numerous flowers and the small petals. Known only from the type.

Rubus alnifolius Rydb. was referred to the *Sapidi,* but is not closely related to any of the species of the group. It is characterized by the racemose inflorescence and the coriaceous leaflets, obtuse or rounded at both ends. It is only known from the type collection.

DURI

Rubus durus Sauvalle. This is characterized by its narrow inflorescence, coriaceous, shining leaflets, which are mucronate-serrulate and glabrous on both sides or nearly so beneath. Focke describes a variety *Grisebachii* with the leaves ferrugineous-villous beneath. This is unknown to me. I have seen but the following specimen of the species:

CUBA: *Wright 2410.*

Rubus florulentus Focke. This differs from the preceding in the open corymbiform inflorescence and glabrous drupelets, and larger petals. To it belongs:

PORTO RICO: Adjuntas, 1885, *Sintenis 4100.*

Rubus Eggersii (Focke) Rydb. *R. florulentus Eggersii* Focke.

This I think distinct from *R. florulentus.* Its leaves are similar but not so shining, and they are densely ferrugineous-pubescent beneath.

SANTO DOMINGO: near Constanza, 1910, *Von Tuerckheim 2913.*

Rubus domingensis Focke. I have seen no typical material of this species, but the following was so named by Dr. Focke. It does not exactly agree with the description, but may be rightly determined. If so, *R. domingensis* has less coriaceous leaves than the rest of the group.

SANTO DOMINGO: near Constanzia, 1910, *Von Tuerckheim 3140.*

URSINI

Rubus ursinus Cham. & Schlecht. All the species of blackberries on the Pacific coast have usually been included in this species. If so, the species must be a very variable one. The plants of the Columbia valley have glabrous, subglobose fruit, thin only sparingly pubescent leaves, and the leaves of the young shoots are rarely unifoliolate. The common plant of southern California has pubescent elongate fruit, thick leaves, densely pubescent beneath, and those of the new shoots usually unifoliolate. These two forms represent respectively *R. macropetalus* Dougl. and *R. ursinus* Cham. & Schlecht. But all plants of southern and central California do not have thick leaves and occasionally plants are found that have glabrous fruit. These, however, do not have the habit and globose fruit of *R. macropetalus.* These variations have caused most botanists to regard all as forms of one species. I think that a better solution is to admit at least five species of this group on the Pacific coast. If so, what names are they to have?

The southern Californian plant mentioned above is *Rubus ursinus* Cham. & Schlecht. The type was from the vicinity of San Francisco, near the northern limit of the species. Dr. Focke has pointed out that *R. Menziesii* Hook. is the same and not the plant related to *R. spectabilis*, which Dr. Watson called *R. spectabilis Menziesii.* The confusion has probably been caused by the fact that Dr. Hooker suggested that the flowers were pink. The rest of the description, however, agrees better with *R. ursinus.* The type of *R. Menziesii* was also from San Francisco, where the other species grows. *R. ursinus* is the most common of the species in the southern part of the Pacific slope. Dr. Focke in his final monograph in Bibliotheca Botanica calls it *R. ursinus Menziesii*, making *R. macropetalus* the typical *R. ursinus*.

Rubus vitifolius Cham. & Schlecht. was described from a branch bearing only unifoliolate leaves, but the description of their texture and pubescence does not agree with the common plant. As there is a thin-leaved and less pubescent plant with pubescent fruit growing in the region, and this agrees with the description of *R. vitifolius*, I adopted that name without hesitation. It is also without much doubt *R. ursinus glabratus* Presl. It is represented by the following specimens:

CALIFORNIA: San Francisquito Creek, Santa Clara County, 1902, *Abrams 2435;* Mt. Tamalpais, 1905, *Rydberg 6245;* Albion Ridge, Mendocino County, 1903, *McMurphy 275;* Crystal Spring Lake, 1903, *Elmer 4664;* Stanford University, 1902, *Baker 857;* without locality, *Kellogg & Harford 223;* San Bernardino, *Parish 292;* Mount Shasta, 1892, *Palmer 2570.*

Rubus Helleri Rydb. As stated before, the common plant of the Columbia region has glabrous fruit, but a few specimens collected in that region have finely pubescent fruit and these have the leaves much darker-green above and of a firmer texture. These specimens are all from stations west of the Cascades. I believe they represent a distinct species. As I found no available name for it, I dedicated it to Mr. Heller, who has collected the best specimens of the same.

WASHINGTON: Montesano, 1898, *Heller 3990.*

BRITISH COLUMBIA: Alberni, Vancouver Island, 1907, *Rosendahl 2041.*

Rubus Eastwoodianus Rydb. Not all the blackberries of California have pubescent fruit. The glabrous-fruited specimens do not belong, however, to *R. macropetalus*, for the fruit is very much elongate and the leaflets are of a different shape. I think they belong to a distinct species, which I had the pleasure to name after one of the most enthusiastic and indefatigable botanists of the western coast, who also acted as my guide on Mount Tamalpais, when the type was collected.

CALIFORNIA: Mount Tamalpais, 1905, *Rydberg 6238;* Pasadena, 1903, *George B. Grant 3670*, doubtfully referred here; so also Jomacha, San Diego County, *Chandler 5225* in small part only.

Rubus macropetalus Dougl. This was mainly described from the staminate plant, while *Rubus myriacanthus* Dougl., described at the same place, is characterized from a more than usually prickly pistillate individual.

LACINIATI

Rubus laciniatus Willd. The origin of this species seems to be unknown. It has been cultivated more than a century at least, is not unknown in gardens, and has become naturalized at many places. The following specimens may be recorded:

WASHINGTON: Chehalis River, 1897, *Lamb 1244;* Quiniault Valley, 1902, *Conard 216;* Montesano, 1898, *Heller 4001.*

OREGON: Forest Grove, 1894, *Lloyd;* Oregon, 1903, *Lunell.*

BRITISH COLUMBIA: vicinity of Nanaimo, Vancouver Island, 1908, *John Macoun 19659;* Victoria, *John Macoun 19658.*

PENNSYLVANIA: Point Pleasant, 1898, *Fretz;* Bethlehem, 1905, *Rau.*

DISCOLORES

Rubus Linkianus Ser. This is usually known as *Rubus fruticosus* among gardeners but has little to do with the original *R. fruticosus* L., which belongs to another group of blackberries. *R. Linkianus* has usually double flowers in cultivation and most escaped plants also bear such; the simple-flowered state is found in the United States only as a ballast plant.

NEW JERSEY: Camden, 1897, *Pollard* (ballast).

MARYLAND: Frederickstown, 1816, *Commons.*

Rubus cuneifolius Pursh has an extensive distribution from Connecticut to Florida but is practically confined to the coastal plains.

ARGUTI

Rubus sativus (Bailey) Brainerd. This was originally described as *R. nigrobaccus sativus.* President Brainerd raised it to specific rank, although the plant he really had in mind was not this but another species which I have named *R. Brainerdi* after him. Mr. Blanchard regards it as a cultivated form of *R. nigrobaccus,* but the plant is found in the wild state, although not very common. It may have arisen through the crossing between *R. nigrobaccus* with *R. frondosus* or *R. Baileyanus,* but it is now found further north than either of these two species. It resembles much *R. Baileyanus* × *nigrobaccus* in the leaf-form, but has more coarsely toothed leaflets and an erect stem. The following specimens belong here:

PRINCE EDWARD ISLAND: between Summerside and Miscouche, 1909, *Blanchard 801* (sheet 2).

QUEBEC: Kingsmere Lake, 1906, *Rydberg 7944*.

ONTARIO: Ottawa, 1906, *Rydberg 7926*.

MAINE: Calais, 1909, *Blanchard 502;* Brownsville, *Blanchard 503*.

NOVA SCOTIA: Granville, 1909, *Blanchard 706;* Kentville, *Blanchard 707*.

NEW BRUNSWICK: Marysville, 1909, *Blanchard 601*.

CONNECTICUT: Southington, 1906, *Blanchard 97* (set 4); Portland, *Blanchard 97* (set 5); Meriden, 1904, *Andrews 18;* Southington, *Andrews 4*.

VERMONT: cultivated, *Blanchard 212;* Mendon, 1899, *Eggleston 1220*.

NEW JERSEY: Newfoundland, 1908, *Mackenzie 3126;* Lucceasunna, 1909, *Mackenzie 4149;* Mt. Arlington, *Mackenzie 1393;* Budd's Lake, *Mackenzie 1517, 1519*.

In some cases specimens are found intermediate between this and *R. nigrobaccus*. They may be hybrids, but as I have not studied these specimens in the field, no attempt has been made to segregate the hybrids.

Rubus nigrobaccus Bailey. This has been known since about a hundred years ago as *R. villosus*, having been mistaken for *R. villosus* Ait., which, however, is antedated by *R. villosus* Thunb. Who was first responsible for the error is hard to tell. Both Michaux and Pursh might have had this plant in mind, but both practically copied Aiton's description. Pursh, however, makes the following remarks: "Known by the name Black-berries," which would suggest this or *R. argutus* rather than *R. procumbens* or *R. plicatifolius*. The same year that Pursh published his Flora, although a little later, Bigelow's Florula Bostoniensis appeared, and here there is no doubt about what plant the author had in mind. Since that time the plant was known as *R. villosus* until Professor Bailey saw the type of Aiton's *R. villosus* and proposed the new name for this. There may be another older name that some people would regard as available. Babington in Gardener's Chronicle,* objects to the fact that gardeners have distributed a "well-known" plant under a new name, *R. americanus.* He claimed: "It is singular that nurserymen will so often issue plants with new names when old and authentic ones exist, and may be discovered without much difficulty. The Blackberry issued under the name of *R. americanus* is the *R. villosus* of Aiton (Hort. Kew., ed. 1, vol. ii., p. 210), and well known under that name to American botanists, as I learn from Dr. Asa Gray. Why give a new name when one already exists? Why give us all the trouble which we have had to find out its real name? But there is a curious point connected with this issue under the name of *R. americanus.* In most cases *R. laciniatus* came with it, and is, as far as I have seen, the prolific fruiting plant. So we have two quite distinct plants issued together under one, and that a new name. Can nothing be done to put an end to these things? They can hardly be of any benefit to the tradesmen, even if that were any excuse."

The plant regarded as *R. villosus* by Gray and other American authors was not the same as *R. villosus* Ait. The plant, therefore, that Babington had in mind was our *R. nigrobaccus.* As a synonym is given under *R. americanus,* it is published according to the American Code, but which plant does it belong to, *R. villosus* Aiton or *R. villosus* of Bigelow and of Gray? This *R. americanus* is older than *R. americanus* Britton and therefore available. If regarded as the same as *R. villosus* Ait., which is cited as a synonym, it should take its place as that is antedated by *R. villosus* Thunb. It should then replace the later *R. plicatifolius* Blanchard, which is the same. If regarded as the same as *R. villosus,* as understood by Bigelow and Gray, it would replace *R. nigrobaccus* Bailey. But whom should we cite as the author of *R. americanus?* We could not very well cite Babington, who strenuously objected to the name. The best to do is therefore to regard *R. americanus* Hort. as "merely incidentally mentioned."

Blanchard, followed by Fernald, Britton, Bicknell, and Brainerd, has adopted *R. allegheniensis* Porter for this species. *R. allegheniensis* was based on *R. villosus montanus* Porter. When

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* III. 2: 99. 1887.

Dr. Porter described this variety and compared it with *R. villosus* he did not mean by the latter *R. Andrewsianus* or *R. argutus*, for the glandular plant was well known to him. Even Professor Bailey held *R. allegheniensis* distinct. When Dr. Porter pointed out as the only differences the narrow dry fruit with its peculiar aroma and did not mention the presence of glands, it is evident enough that both were glandular, for Dr. Porter was too acute an observer not to notice the difference in pubescence between *R. nigrobaccus* and *R. argutus*. I am inclined rather to follow Porter's and Bailey's view and regard *R. allegheniensis* as a distinct species. Furthermore, Mr. Mackenzie, who is well acquainted with *R. nigrobaccus*, has collected *R. allegheniensis* in New Jersey and distributed it under a manuscript name, regarding it as distinct. The latter differs in the slender terete stem, the narrower leaflets on the new shoots usually acute instead of rounded or subcordate at the base, the narrower and drier fruit and the conspicuous yellow glands and smaller flowers. It is a rare plant, suggesting somewhat *R. canadensis* or *R. Randii*. Dr. Britton, noticing that the figures of *R. allegheniensis* in the first edition of the Illustrated Flora, poorly represented the common, glandular high blackberry had a new illustration made, evidently overlooking the fact that the original illustration was made from the type of *R. allegheniensis* Porter. As it is, *Fig. 1899* in the first edition illustrates the original *R. allegheniensis*, while *Fig. 2300* in the second edition is a good illustration of *R. nigrobaccus*.

Sometimes, especially in the north, *R. nigrobaccus* has a leafy-bracted inflorescence and then receives a very different aspect. Such specimens in flower may be taken for a distinct species, but there is no difference in the pubescence or in the leaf forms. It might be mistaken for a hybrid with *R. frondosus*, but that species is unknown in the region where these forms are most common. Such specimens are:

QUEBEC: island in Gatineau River, near Chelsea, 1906, *Rydberg 7933*.

ONTARIO: Ottawa, 1903, *Macoun 59967*.

NOVA SCOTIA: Yarmouth, 1901, *Howe & Lang 89, 107;* Halifax Harbor, *Howe & Lang 1594*.

Rubus allegheniensis Porter. See discussion under *R. nigro-*

baccus. It is a less robust plant than that species and suggests somewhat a slender depauperate woodland form of *R. nigrobaccus*, but the stem is perfectly terete, the sepals narrowly lanceolate and the fruit is elongate, tapering above, and of many small, rather dry drupelets. The plant also suggests a hybrid between *R. nigrobaccus* and *R. Randii*, but the latter species is not found in the region of *R. allegheniensis*. It is not at all the same plant as the hybrid collected by me in the Adirondacks.

Rubus argutus Link. The most distinct of the species of *Rubus* described by Blanchard is *R. Andrewsianus*. It is one of the most common and most widely distributed of our blackberries. It was not a "new" species, however, and was called *R. fruticosus* by Marshall. The trouble has been that it has been confused with *R. villosus* of American authors, that is with *R. nigrobaccus*. Blanchard has done us the great service of pointing out the distinctiveness of the two. His name is, however, not the oldest available name, for it is the same as *R. argutus* Link. Link's description is incomplete, for he evidently did not describe the new shoots in his diagnosis. Mr. Blanchard is not willing to admit that *R. Andrewsianus* is the same as *R. argutus* and claims that at best the latter is an abnormal form of the former. Professor Bailey has kindly sent me a photograph, taken from the type at Berlin. This photograph shows plainly the strongly angled, almost grooved stem and stout prickles, characteristic of *R. Andrewsianus*, and to my mind there is no doubt concerning the identity of the two. Even if *R. argutus* should not be the same, *R. Andrewsianus* is not the oldest available name, for *R. floricomus*, described by Blanchard himself a year earlier, cannot be distinguished from *R. Andrewsianus*.

Rubus floridus Tratt. is closely related to *R. argutus* and represents it in the south. Mr. Blanchard does not distinguish the two. *R. floridus* as a rule, however, is rather distinct, has thinner leaflets with finer pubescence, those of the new shoots usually narrower and more finely toothed; the prickles are also more curved and more flattened and the branches terete. The species may hybridize, which may explain the intermediate form from regions where their ranges overlap.

Rubus betulifolius Small is closely related to *R. floridus*, but the leaves are still thinner and glabrous or nearly so. Slender forms, in which the branches are arching, resemble also somewhat *R. lucidus*, but the leaves are not persistent, not so shining and much thinner. The following specimens belong here.

ALABAMA: Auburn, 1898, *Baker 1590;* Spring Hill, 1909, *Mackenzie 4018;* Mobile, 1899, *Earle 2014.*

NORTH CAROLINA: Lake Catherine, *House 4517.*

ILLINOIS: National Stock Yard (opposite St. Louis), 1878, *Eggert.*

Rubus frondosus Bigelow has been misunderstood and not well known, probably because there were so few specimens in the herbaria. Mr. Blanchard had done a good deal in clearing up the confusion. *R. frondosus* is not so rare, however, as supposed, and has a rather wide range, extending as far west as Kansas and Iowa. The range north and south, however, is not so wide, only from Massachusetts to Virginia. It is evidently confined to the hardwood belt. *R. philadelphicus* is but a small-leaved form of the same.

Rubus recurvans Blanch. I cannot distinguish *R. arundelanus* Blanch. and *R. Jeckylanus* from the same. *R. recurvans* itself is not a very strong species, being closely related to *R. frondosus.* Mr. Bicknell does not regard it as distinct. *R. recurvans* has a more northern distribution, but the two come together in southern New England and New York.

Rubus Brainerdi Rydb. This plant Professor Brainerd had in mind when he raised *R. nigrobaccus sativus* Bailey to specific rank. It has nothing to do with *R. nigrobaccus sativus*, however. Its relationship is with *R. frondosus* on one hand and *R. Baileyanus* on the other. It cannot very well be a hybrid of the two, for the type station is practically outside the range of both species. Professor Brainerd regards it as a form of *R. recurvans.* The following specimens have been collected.

VERMONT: Otter Creek, Wrybridge, 1899, *Brainerd;* Twin Mountain, West Rutland, 1900, *Eggleston 2005;* 1899, *Eggleston 1209, 2661;* Weybridge, 1902, *Eggleston 2893.*

Rubus pergratus Blanch. This seemed to me for a long time as the hybrid of *R. canadensis* and *R. nigrobaccus* and it resembles in many points that hybrid, but both Mr. Blanchard and Professor

Brainerd, who have studied the plant in the field, claim that it is perfectly distinct, rather common and well-fruiting, and the latter stated to me that it did not act as a hybrid. Furthermore, it is found higher up in the mountains than *R. nigrobaccus.* It differs from *R. canadensis* × *nigrobaccus* in being almost glandless. If glands are present, they are sessile or subsessile. It may have originated as a hybrid, but evidently now is an established species. *R. orarius* Blanch., I think, should be referred here. The only difference is the somewhat broader leaflets.

Rubus amicalis Blanch. This was first described as *R. amabilis*, which name, however, was preoccupied and *R. amicalis* was substituted. It is closely related to *R. canadensis*, but is best kept distinct, although the characters are not very strong. It has a very limited distribution in the north. The following specimens belong to it.

NOVA SCOTIA: Digby 1909, *Blanchard 714;* road from Brazil Lake to Ohio, *Blanchard 713;* Kentville, *Blanchard 716;* Bridgetown, *Blanchard 715;* Pictou, *Blanchard 717;* between Antigonish and Lochaber, 1906, *C. B. Robinson 468;* Maybou, *C. B. Robinson 232.*

NEW BRUNSWICK: St. Stephens, 1909, *Blanchard 607;* Painsic Junction, *Blanchard 602;* Grand Bay, *Blanchard 609.*

MAINE: Kennebunk, 1905, *Blanchard 75;* Isle au Haut, 1909, *Arthur 50, 58.*

To this species I also refer some odd forms from Newfoundland with nearly unarmed stems 1–1.5 cm. in diameter, coarser toothed leaves and leafy inflorescence. Such are:

NEWFOUNDLAND: Topsail, 1901, *Howe & Lang, 1232, 1330.*

Rubus canadensis L. The history of this species has been given by Bailey and Blanchard, so nothing more needs to be said. *R. Millspaughi* Britton was based on southern specimens. These cannot be separated from the northern plant, not even as a variety.

Rubus elegantulus Blanch. This might be of a hybrid origin, the parents being *R. canadensis* and *R. nigricans* or *R. vermontanus*, but it is now a well established species and differs in many respects from the hybrids of those species. The stem is armed with weak prickles rather than bristles, and these are confined to the angles of the stem. It resembles *R. canadensis* × *nigricans* most, but the inflorescence does not have the gland-bearing bristles of the inflorescence of nearly all of the *R. nigricans* hybrids.

VERMONT: Londonderry, *Blanchard 248, 249;* Westminster, *Blanchard 185;* South Windham, *Blanchard 215, 216;* Strattom, *Blanchard 217;* Townsend, *Blanchard 214.*

NEW HAMPSHIRE: Alstead and Windham, *Blanchard 60, 220, 218.*

MAINE: Isle au Haut, 1909, *Arthur 51.*

MASSACHUSETTS: Southwick, *Blanchard 253.*

Rubus Randii (Bailey) Rydb. This may be a form or variety of *R. canadensis*, but to me it seems unlikely. The slender subherbaceous habit and light-green leaves and usually light-colored stem suggest distinctiveness enough, especially as I have seen them both growing in the same localities in the Little Moose Lake region of the Adirondacks.

NOVA SCOTIA: Halifax Harbor, 1901, *Howe & Lang 1578.*

MAINE: Mount Desert Island, *Rand & Redfield.*

VERMONT: Middlebury, 1899, *Brainerd;* Putney, 1902, *Blanchard 188;* Abby Pond, Ripton, 1898, *Brainerd;* Rutland 1900, *Eggleston 1994.*

MASSACHUSETTS: Dalton, 1903, *Blanchard 238.*

NEW YORK: Tannersville, 1906, *Rydberg 8018;* East Lake, Little Moose Lake region, *Rydberg 7866;* Lime Kiln Falls, *Rydberg 7894.*

PROCUMBENTES

Rubus cymosus Rydb. Until lately there was in southern Mexico only one species of *Rubus* of the northern dewberry type with thin deciduous few-nerved leaves, viz., *R. humistratus*. *R. cymosus*, however, cannot be confused with *R. humistratus*, for in the former the prickles are stout, flat, and strongly curved, but in the latter, straight and slender; in the former the flowers are several and cymose, in the latter usually solitary. *R. cymosus* is known only from the type collection.

Rubus oligospermus Thornber. This has been known for half a century, but has been confused with *R. trivialis* and *R. humifusus*. It does not have the solitary flowers of these two species, however, nor the evergreen leaves of *R. trivialis*, nor the slender habit and the weak straight prickles of *R. humifusus*. It was first collected by Thurber on the Mexican Boundary Survey. The following specimens belong to it.

DURANGO: City of Durango and vicinity, 1896, *Palmer 10.*

ARIZONA: Santa Rita Mountains, 1881, *Pringle;* Santa Catalina Mountains, 1881, *Pringle;* 1908, *Livingston & Thornber;* Huachuca Mountains, 1909, *Goodding 439.*

SAN LUIS POTOSI: *Schaffner 105, 474;* 1878, *Parry & Palmer 224.*

SONORA: Nogales, 1893, *Mearns 2640.*

Rubus rhodophyllus Rydb. This is a rare species and might have been taken for a prostrate form or a hybrid of *R. argutus*, but that species is not found in Mississippi. As it was for years known from only one collection, it might have been considered a freak, if it had not also been collected in Florida.

MISSISSIPPI: Point St. Martin, 1898, *Tracy 4107.*

FLORIDA: Duval County, 1894, *Fredholm, 458.*

Rubus invisus Bailey is a rather local and variable species and acts in certain ways as a hybrid. One of the parents might be *R. procumbens* or *R. Baileyanus*, but I know of no species that could be suggested as the other parent, as the coarse rather regular toothing of the leaves is unique. The following specimens belong here:

ONTARIO: Niagara Falls, 1901, *Macoun 34777.*

MASSACHUSETTS: Northampton, 1904, *Andrews 40.*

VIRGINIA: near Luray, 1901, *Steele 194.*

NORTH CAROLINA: Biltmore, 1896, *Biltmore herbarium 7994^e.* (This was originally labeled *R. Baileyanus* Britt. Later somebody has written in lead pencil, *R. Boyntoni* Ashe.)

Rubus Baileyanus Britton is not a very uncommon species, although its range north and south is rather narrow. It resembles in that respect *R. frondosus*, which represents it among the erect blackberries. The broad cordate or subcordate terminal leaflets of the new shoots, the thin pubescent leaves, the large unifoliolate leaves of the inflorescence and the more or less glandular pedicels distinguish this from all the dewberries, except *R. invisus*, from which it differs in the toothing of the leaves.

Rubus arenicola Blanch. This is a rather local species and may be of hybrid origin, but I do not know what parents to suggest. It is related to *R. Baileyanus* and *R. procumbens*. The former is not found in the region where *R. arenicola* grows. It could be a hybrid between *R. procumbens* and *R. hispidus*, if the leaves were not rather densely hairy. It is, therefore, best to regard it as a distinct species.

NOVA SCOTIA: Granville, *Blanchard 731*.

ONTARIO: Humber River, *J. White 73076*.

MAINE: York Beach Summit, 1909, *Blanchard 515;* Kennebunk, 1905, *Blanchard 63*.

Rubus plicatifolius Blanch. This was first described by Aiton as *R. villosus*, but there is an older *R. villosus* of Thunberg, and the name is therefore not available. In this country the name *R. villosus* Ait. has usually been applied to *R. nigrobaccus*, sometimes to *R. argutus*. Professor Bailey discovered that the original *R. villosus* Ait. was not a blackberry but a dewberry. Aiton's plant has decidedly pubescent leaves, but Professor Bailey did not think this character was very important and therefore regarded it as a form of *R. procumbens* to which he applied the name *R. villosus*. *R. plicatifolius* is a northern plant, in the southern part of the range, limited to the mountain regions.

QUEBEC: island in Gatineau River, near Chelsea, 1906, *Rydberg 7941, 7932;* Kingsmere Lake, *Rydberg 7942*.

NOVA SCOTIA: Annapolis 1909, *Blanchard 732;* Dartmouth, *729*.

MAINE: Wells Beach, 1905, *Blanchard 64;* Bingham, *511;* Veazie, 1905, *Knight*.

NEW YORK: Tannersville, 1906 and 1908, *Rydberg 7959, 7980, 7963, 8018*.

NEW JERSEY: Budds Lake, 1905, *Mackenzie 1333*.

MINNESOTA: Centerville 1891, *Sandberg 697;* Basswood Lake, 1891, *F. E. Wood*.

Rubus aboriginum Rydb. resembles in many respects *R. Baileyanus*, especially in the texture and pubescence of the leaves, the foliaceous inflorescence, and the large flowers, but differs in the absence of glandular hairs, and in the ovate instead of broadly cordate terminal leaflet of the new shoots. The leaves of the inflorescence are not so broad.

OKLAHOMA: "Indian Territory," chiefly on the False Washita between Fort Cobb and Fort Arbuckle, 1868, *Palmer 68, 69*.

KANSAS: Riley County, 1895, *Norton 136;* Pottawatomie County, 1895, *Hitchcock 971*.

Rubus heterophyllus Willd. This is related to *R. procumbens*, but differs in the incised toothing of the leaves. It is not so common. *R. heterophyllus* was for a long time a so-called "lost" species. Nobody seemed to know what it was. Bailey thought that it must have been a hybrid of *R. procumbens*. For some time, I held the opinion that it must be either *R. procumbens* or else *R. villosus michiganensis* Card. The latter was described independently by Blanchard as a species under the name *R. geophilus*, though the type of the latter has less harsh leaves than usual. A photograph of the type of *R. heterophyllus* was kindly sent me from the Botanical Garden at Berlin, and this shows, without doubt, that it is the same as *R. villosus michiganensis* and *R. geophilus*.

Rubus flagellaris Willd. This species has also been lost for about one hundred years. Professor Bailey thought that it was not American, at least no specimens had he seen in any of the herbaria, and I have not seen any but those collected by Mr. Bicknell, who rediscovered it on Long Island and Nantucket Island. Some of his specimens match closely the illustration prepared by Professor Bailey from the type. It also agrees with Willdenow's description.

Rubus procumbens Muhl. This name appears first in Muhlenberg's catalogue of 1813, without a description. It was given as a synonym under *R. trivialis* in Bigelow's Florula Bostoniensis in 1914, Bigelow mistaking this species for *R. trivialis* Michx. The first description under the name *R. procumbens* appeared in Barton's Flora of Philadelphia. Torrey and Gray mistook it for *Rubus canadensis*. This mistake was pointed out by Professor Bailey, who adopted the name *R. villosus* Ait., not believing that the more pubescent plant, *R. plicatifolius*, was distinct. *R. villosus*, however, is not available, as there was an older *R. villosus* Thunb. I myself thought that *R. procumbens* Muhl. was the pubescent plant, wherefore I redescribed the present species under the name *R. subuniflorus*. It is evident, however, that Barton described the glabrate plant. *R. procumbens* is the most widely distributed of our dewberries.

Rubus Enslenii Tratt. This is mainly a southern species extending along the coast as far up as to Nantucket Island.

Bailey regarded this and *R. Baileyanus* identical, and Mr. Blanchard includes it in *R. procumbens*. Mr. Bicknell and myself think it distinct. It has the thin leaves of *R. Baileyanus*, but they are narrower and almost glabrous. The leaves of the new shoots are often but three-foliolate and the shoots themselves are often erect at first. The thin leaflets of a different shape distinguish them. In the southern states it is, next to *R. trivialis*, the most common dewberry. The following northern specimens belong to it.

MISSOURI: Forest Hill Cemetery, Jackson County, 1897, *Mackenzie;* Butler County, 1905, *Bush 2562 B;* St. Louis, 1878, *Eggert.*

NEW YORK: Bronx Park, 1906, *P. Wilson.*

MASSACHUSETTS: Pine Grove, Nantucket Island, 1908, *Bicknell 14;* below the cliff, Nantucket Island, *Bicknell 13.*

Rubus huministratus Steud. This species was first described under the name *R. humifusus*. As that name had already been used, Steudel substituted *R. humistratus*. It is easily distinguished from the other Mexican species by its slender habit, weak prickles and solitary flowers.

OAXACA: Puerto de Laskopa, 1842, *Liebman 1625.*

VERA CRUZ: Jalapa, 1899, *Rose & Hough 4364, 4935.*

HISPIDI

Rubus nigricans Rydb. This was first described as *R. hispidus erectus* by Professor Peck. Dr. Britton thought that it was identical with *R. setosus* Bigelow, but in separating the specimens in the Torrey herbarium, he placed some specimens collected by Bigelow with *R. hispidus*, not noticing that these were part of the type of *R. setosus*. Britton has been followed by Blanchard, Brainerd, and others. *R. setosus* is in reality closer to *R. hispidus* (except for the semi-persistent leaves of the latter) than to *R. nigricans*. Fernald, in the new Gray's Manual, has misunderstood *R. nigricans* and adopted the name for *R. vermontanus*. *R. Groutianus* I regard as a nearly glandless form of this species.

Rubus setosus was described in the second edition of Bigelow's Florula Bostoniensis. Dr. Britton for some time regarded this as the same as *R. nigricans* but later adopted Bicknell's view that it was a hybrid between that and *R. hispidus*. Blanchard and

Brainerd still regard it as the same as *R. nigricans*. The two are species, however, not quite identical. *R. setosus*, of which there are two sheets from the original collection in the Torrey herbarium, is a more slender plant with racemose inflorescence and thinner leaves. The flowers themselves resemble more those of *R. hispidus*. I would have been inclined to regard *R. setosus* as a freak or local form, if I had not collected the same form myself and been unable to refer the specimens to either *R. hispidus* or *R. nigricans*. The following I take to belong here:

NEW YORK: Tom Peck's Pond, near Lake Placid, 1906, *Rydberg 7952;* Long Pond, *Rydberg 7949, 7948;* Lime Kiln Falls, vicinity of Little Moose Lake, *Rydberg 7895;* Twin Lakes, *Rydberg 7823.*

CONNECTICUT: Southington, 1904, *Andrews 25.*

Rubus vermontanus Blanch. As said before this was mistaken for *R. nigricans* by Fernald, but is evidently distinct. It is a species confined to the northern woods.

VERMONT: Ripton, 1897, *Brainerd 201;* South Wadsboro and Grafton, 1902, *Blanchard 176;* Lily Pond, Westminster, *Blanchard 2;* West Jamaica and Ripton, 1902, *Blanchard 176;* Londonderry, 1903, *Blanchard 245;* Brookline, 1902, *Blanchard 58* (set 1); Grafton and Rockingham *Blanchard 58;* Mendon and Wallingford, 1900, *Eggleston 2007, 2006, 2857, 2858.*

CANADA: *Macoun 5793, 6097, 19072.*

Rubus hispidus L. This species is very well known and nothing further needs to be said.

TRIVIALES

Rubus lucidus Rydb. This is the same as *R. trivialis* β. of Hooker's Compendium and *R. persistens*, partly, of Small's Flora. The latter was based on this and some hybrid forms. Unfortunately, one of the latter was assigned as the type, and hence this species needed another name. It has also been confused with *R. trivialis*, but never bears any bristles, and the flowers are seldom solitary as in that species. The following specimens belong here:

FLORIDA: Dunedin, 1900, *Tracy 6855;* Tampa, 1903, *Britton, Britton & Shafer 19.*

ALABAMA: Auburn, 1897, *Earle & Baker* (mixed with *R. trivialis*).

MISSISSIPPI: Biloxi, 1898, *Tracy 4106.*

SOUTH CAROLINA: Hilton Head, 1864, *Eaton.*

Rubus trivialis Michx. is well known, although *R. lucidus* and *R. carpinifolius* have been mistaken for it. It is very variable as to the width of the leaflets. A peculiar form with narrowly lanceolate leaflets has been collected in Louisiana and Mississippi. It may represent a distinct species, but the material is too meager. The specimens of this form are the following:

LOUISIANA: Cat Island, Mississippi Delta, 1900, *Lloyd & Tracy 263.*

MISSISSIPPI: Biloxi, 1898, *Tracy 4114.*

Rubus carpinifolius Rydb. This is closely related to *R. lucidus*, but differs in the double-toothed leaflets of the new shoots. It is also sometimes as bristly as *R. trivialis.* The following specimens belong here:

TEXAS: New Brunnfels, 1850, *Lindheimer 791;* San Antonio, 1853, *Thurber;* Gillespie County, *Jermey* (named *R. occidentalis*); San Felipe, 1839, *Lindheimer.*

ARKANSAS: Fort Smith, 1853, *Bigelow* (Whipple Exp.).

MISSOURI: Eagle Rock, 1896, *Bush 18;* White River, 1896, *Mackenzie.*

LOUISIANA: Alexandria, 1899, *Ball 428.*

Rubus rubrisetus Rydb. is a very rare and local species. Only the following specimens have been seen:

MISSOURI: St. Louis, 1874, *O. Kuntze 2789; Bush 116.*

LOUISIANA: 1885, *Poggenburg; Biltmore herbarium 4488^c.*

NEW YORK BOTANICAL GARDEN